CLAIMS

What is claimed is:

1. A package for an optical fiber sensor, comprising:

a) an optical fiber sensor;

b) a metal jacket surrounding the sensor, wherein:

the metal jacket is made of low melting point metal,

the metal jacket is formed by melting and refreezing, and

wherein an outer surface of the metal jacket is shaped by contact with shrunken heat-shrink tubing when in a molten state.

2. The package of claim 1 further comprising the shrunken heat shrink tubing surrounding the metal jacket.

3. The package of claim 1 wherein the metal jacket is made of a metal selected from the group consisting of lead, tin, bismuth, indium, gallium and alloys thereof.

4. The package of claim 1 further comprising a first rigid tube disposed between the sensor and metal jacket, wherein the rigid tube surrounds the sensor.

5. The package of claim 4 wherein the rigid tube is wet by the low melting point metal.

6. The package of claim 4 further comprising a second rigid tube between the first rigid tube and the metal jacket.

7. The package of claim 1 wherein the low melting point metal jacket has a melting point less than about 400 degrees Celsius.

8. The package of claim 1 wherein the low melting point metal jacket has a melting point less than about 350 degrees Celsius.

9. The package of claim 1 wherein the low melting point metal jacket has a melting point less than or equal to a temperature that causes the heat-shrink tubing to shrink.

10. The package of claim 1 wherein the sensor is for use in a downhole.

11. The package of claim 1, further comprising a coil wrapped around the sensor and within the heat shrink tubing, wherein the coil is embedded within the metal jacket.

12. The package of claim 1, further comprising a plurality of short tubing pieces disposed around the sensor and within the heat shrink tubing, wherein the short tubing pieces are embedded within the metal jacket.

13. A method for packaging an optical fiber sensor, comprising the steps of:

a) disposing the sensor within a heat shrink tube;

b) disposing a low melting point metal within the heat shrink tube;

c) heating the heat shrink tube and low melting point metal so that the tube shrinks and the metal melts.

14. The method of claim 13 wherein the low melting point metal is provided in the shape of a tube or coil before step (c).

15. The method of claim 13 wherein the heat-shrink tube and metal are heated by scanning the location of applied heat so as to minimize trapped air bubbles.

16. The method of claim 13 wherein step (c) is performed in vacuum.

17. The method of claim 13 wherein the sensor is disposed in the heat shrink tube after the metal is melted but before the tubing has shrunk.

18. An optical fiber package, comprising:

at least one optical fiber;

a metal or alloy encasing said at least one optical fiber; and

heat shrink tubing encasing said metal or alloy, wherein said metal or alloy has a melting point which is less than a temperature at which said heat shrink tubing shrinks.

19. The optical fiber package of claim 18, further comprising at least one rigid tube positioned between said at least one optical fiber and said metal or alloy casing.

20. The optical fiber package of claim 19 further comprising at least a second rigid tube positioned over said at least one rigid tube.

21. The optical fiber package of claim 19 further comprising bonds between said at least one optical fiber and said at least one rigid tube.

22. The optical fiber package of claim 18 further comprising a metallic coil positioned in said metal or alloy casing.

23. The optical fiber package of claim 20 wherein said at least a second rigid tube is of a different length than said at least one rigid tube.

24. The optical fiber package of claim 18 wherein said at least one optical fiber includes at least two optical fibers.